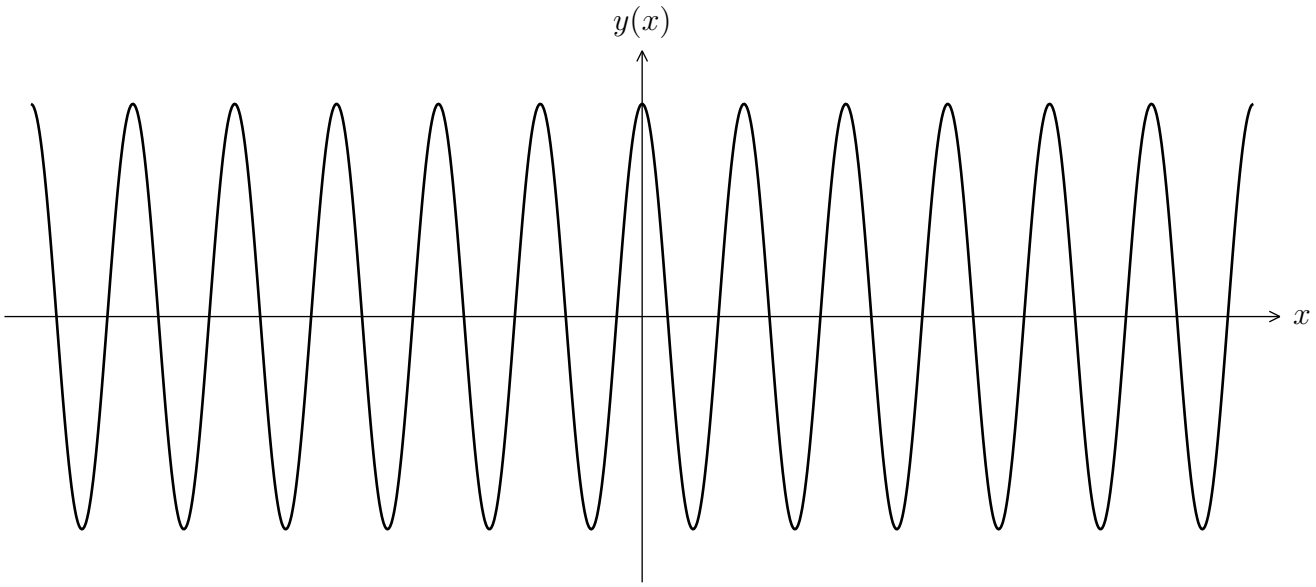
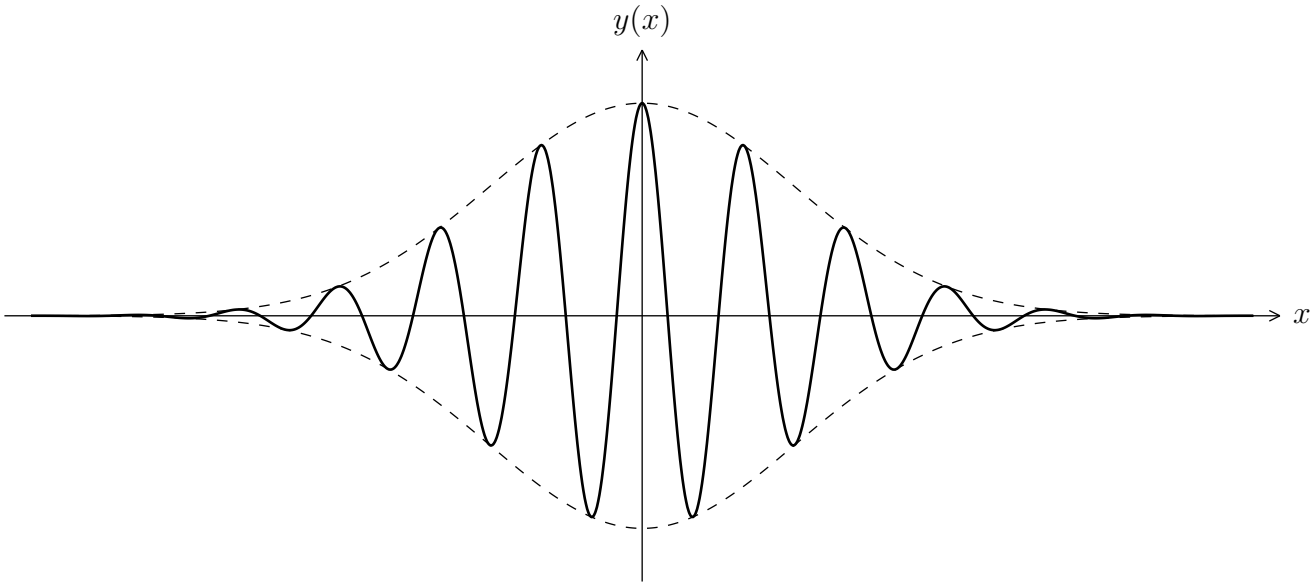
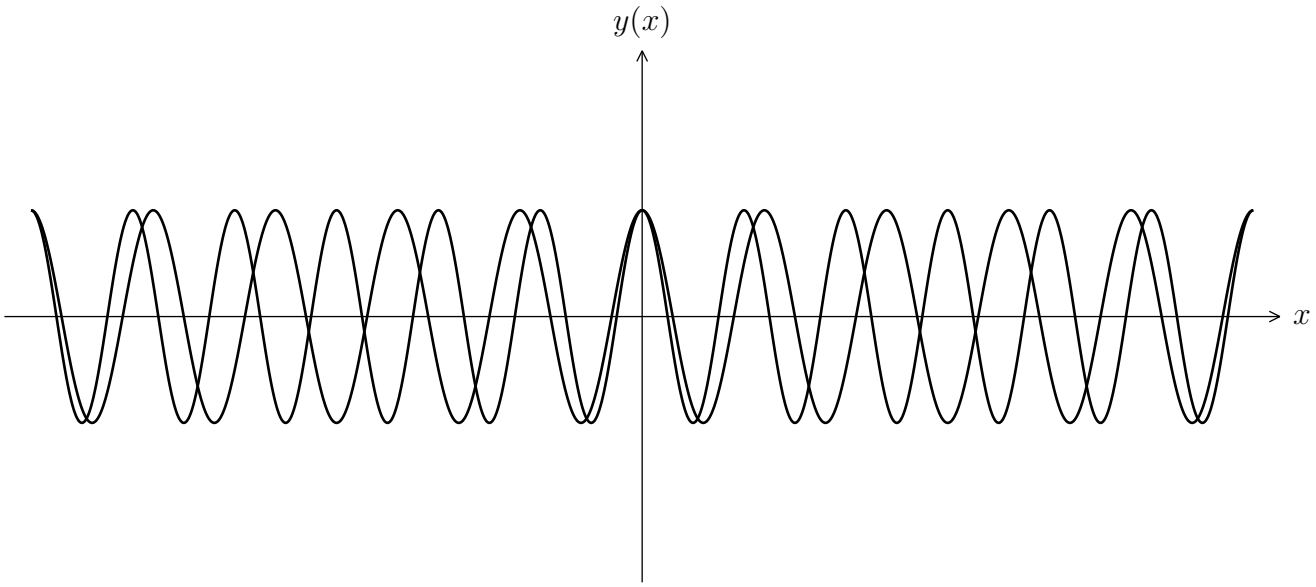
Unlocalized wave; single wave number...



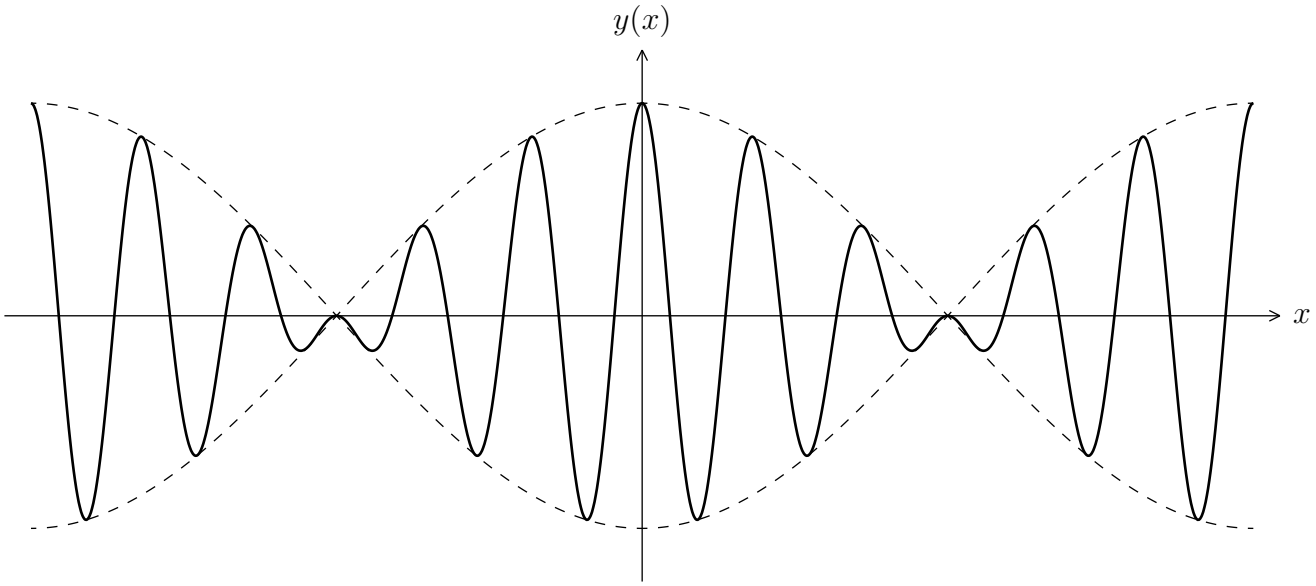
Localized gaussian wave packet...



Two waves ($k_1 = k - \frac{1}{2}\Delta k$ and $k_2 = k + \frac{1}{2}\Delta k$)...

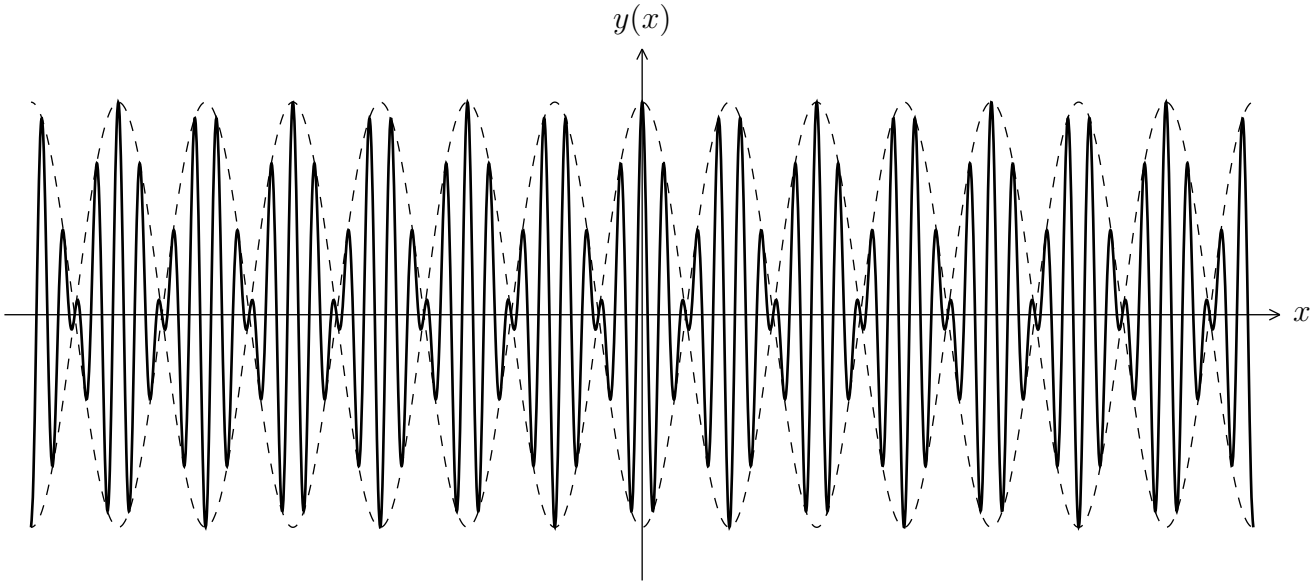


Superposition of those waves: beat pattern...

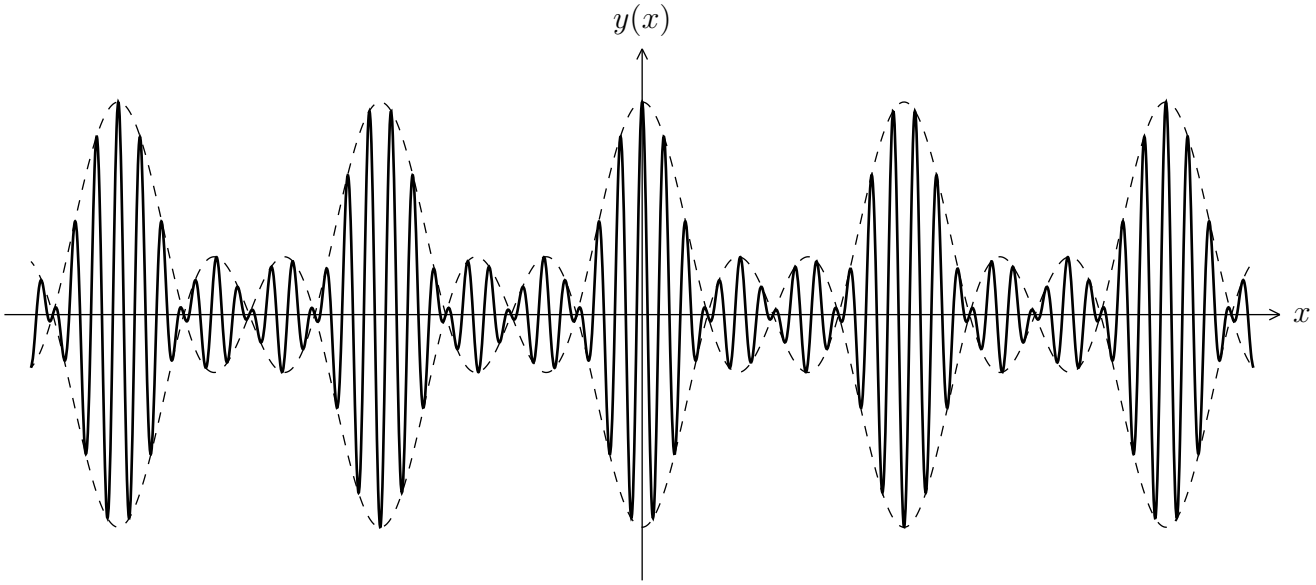


Superposition of $N+1$ waves with wave numbers distributed uniformly between $k - \frac{1}{2}\Delta k$ and $k + \frac{1}{2}\Delta k$

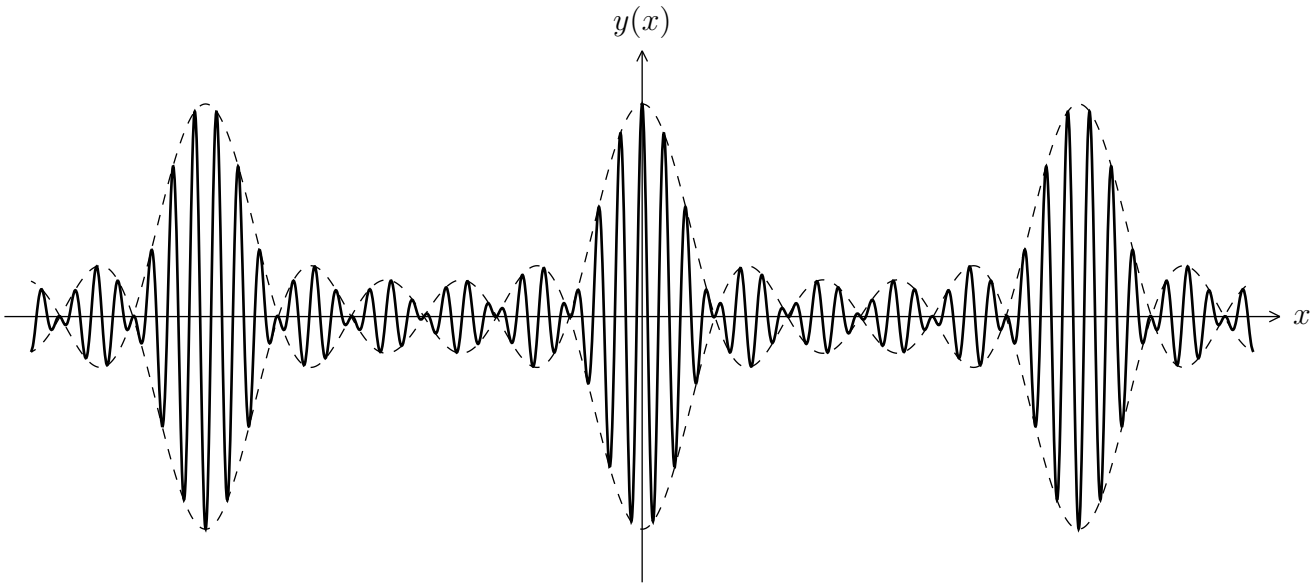
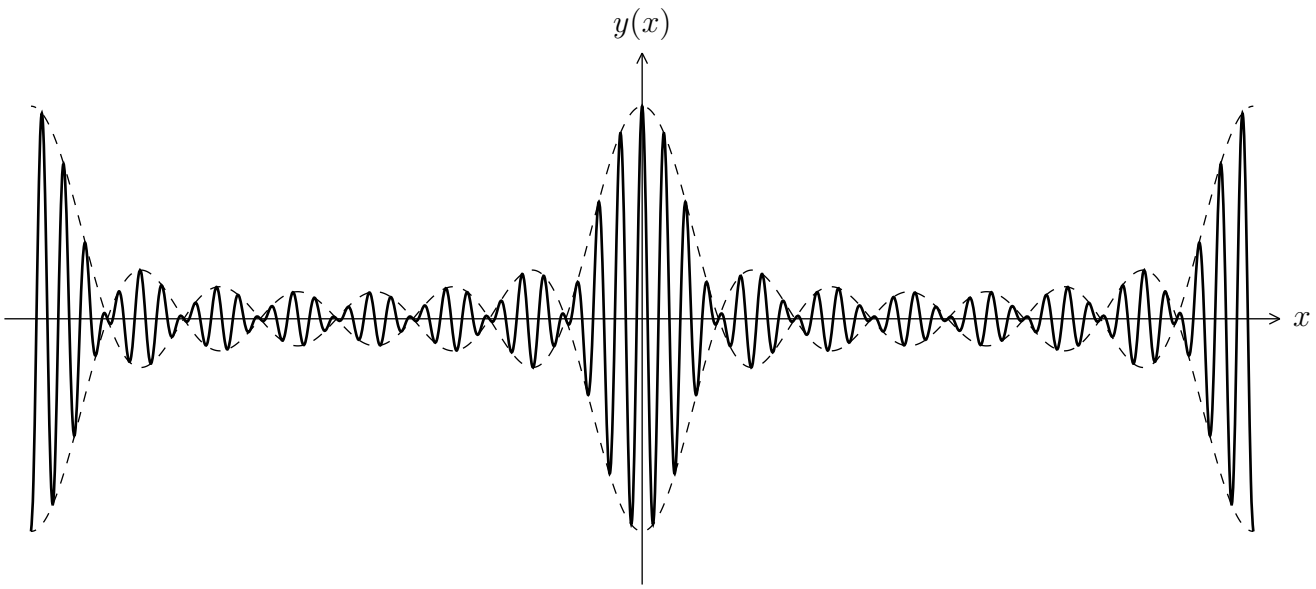
$N + 1 = 2\ldots$



$N + 1 = 4\ldots$



$N + 1 = 6 \ldots$



$N + 1 = 8 \ldots$